NEW YORK UNIVERSITY–BELLEVUE MEDICAL CENTER
NEW YORK UNIVERSITY COLLEGE OF MEDICINE
477 FIRST AVENUE, NEW YORK 16, N.Y.

DEPARTMENT OF MICROBIOLOGY

OREGON 9-3200

March 10, 1954

Dr. Joshua Lederberg
Department of Genetics
The University of Wisconsin
College of Agriculture
Madison 6, Wisconsin

Dear Lederberg:

Many thanks for your letter and for your criticism which I feel is quite justified.

In the first place lysogenicity seems to be a necessary but <u>not</u> a sufficient condition for toxigenicity. Both Groman and Barksdale (who is now working in Lwoff's laboratory in Paris) have independently discovered a phage, different from ϕ, which lysogenizes but does not toxigenize. As far as experience in this laboratory is concerned, all ϕ carrying strains are toxigenic.

However, in the experiments which Barksdale and I reported, I am quite certain that all the resistant colonies remaining after treatment with ϕ phage and spreading on plates containing the lytic phage B, were either lysogenic or still sensitive. I do not remember whether all of these colonies were tested for lysogenicity <u>before</u> being tested in rabbits. However, I know that this was done in a number of cases. All the colonies which proved non-toxigenic in rabbits proved to be still sensitive when retested as indicator strains with phage B. For these reasons I think we were justified in stating that every lysogenic cell was a toxigenic cell in these experiments. I agree that this was not entirely clear in our paper.

The C4 (ϕ_1) culture was obtained by treating C4 with lytic phage B isolated from single clear plaques. Obviously, ϕ_1 arose as a mutant during propagation of B on C4 (the non-toxigenic strain).

The high titer ϕ_1 phage used for our conversion experiments probably contained a good deal of ϕ_1 carried over from the original lysate of the U.V. induced lysogenic strain.

I am sending copies of your letter and of this one to Barksdale in case he wishes to make further comments.

Yours sincerely,

Alex Pappenheimer Jr.

A. M. Pappenheimer, Jr.
Professor of Microbiology

AMP:ngn